

Coconino National Forest Plan Revision

## Pinyon-Juniper

### General Description

- The Pinyon-Juniper (PJ) woodland vegetation community is collectively composed of the Juniper Grassland, PJ Grassland, PJ Evergreen Shrub, and PJ Woodland (persistent) vegetation types. These generally occur at elevations between approximately 4500 and 7500 *[will be adjusted to reflect Coconino NF elevations]* feet.
- They are dominated by one or more species of pinyon pine and/or juniper and can occur with a grass and forb dominated understory (Juniper grassland and PJ grassland), a shrub dominated understory (PJ evergreen shrub), or a sparse discontinuous understory of some grasses and/or shrubs (PJ persistent woodland). Two-needle, single-leaf, Mexican, and border pinyon pine are common, as well as one-seed, Utah, redberry, Rocky Mountain, and alligator junipers, and a lesser abundance of oaks.
- Species composition and stand structure vary by location primarily due to precipitation, elevation, temperature, and soil type. In some locations, grassland soil types are interspersed with pinyon-juniper soil types.
- Historically, persistent PJ did not develop an understory that could carry fire because it is generally located in rocky areas and on rocky outcrops.

### Desired conditions - Pinyon Juniper Communities

- Tree basal areas range from 30 to 60 square feet per acre *[will be supplemented with basal area ranges specific to type and the Coconino NF]*.
- A shifting mosaic of continuous canopy is interspersed with openings across the landscape. There is connectivity of openings between trees that provide for sufficient sighting distance to facilitate pronghorn *[will generalize for all wildlife]* movement.
- Large snags and old trees with dead limbs and tops are persistent and scattered across the landscape.
- Plant litter (leaves, needles, etc.) is present in sufficient quantity to resist accelerated soil erosion and promote nutrient cycling, water retention, and the microclimate conditions necessary for pinyon seed germination.
- Large coarse woody debris is present *[will describe range of quantity]*.

- There are sufficient “nurse trees” to provide understory microclimate with improved nutrient and soil properties, higher soil moisture, and lower temperatures and light levels which increase pinyon seedling survival under harsh conditions.
- There are opportunities for collecting forest products (firewood, pinyon nuts, post and pole etc.) consistent with other desired conditions.
- Pine stringers, or noncontiguous narrow communities of predominantly ponderosa pine, extend below the normal elevational distribution of ponderosa pine and persist where they naturally occur.
- The composition, structure, and function of vegetative conditions are resilient to the frequency, extent and severity of disturbances (e.g. insects, diseases, and fire) and climate variability.
- Plants used by tribes thrive here. There are *[number to be determined]* plants known to be used by tribes that traditionally use the forest.
- A robust crop of pinyon pine nuts is regularly produced.
- Biological soil crusts are present, especially in sandier soils.
- Invasive species do not occur at levels that disrupt ecological functioning.

### **Desired Conditions - Pinyon-Juniper Grassland / Juniper Grassland**

- Pinyon-Juniper Grassland and Juniper Grassland are generally uneven aged and open in appearance. Trees occur as individuals, and small groups, and range from young to old. Basal area ranges from 10-30 square foot per acre.
- Scattered shrubs and an herbaceous understory relative to site capability including native grasses, forbs and annuals are present to support frequent surface fires and provide food and cover for wildlife. Shrubs, grasses, and vegetative ground cover (forbs, litter, and coarse woody material) are present and sufficient to maintain soil stability and soil productivity *[will add minimum amount of coarse woody debris range for soil stability and productive]*.
- Snags and older trees with dead limbs are scattered across the landscape.
- Fires typically occur every 1-35 years with low-severity and patches of mixed severity (Fire Regime 1) (Table 1) favoring re-growth and germination of native grasses and forbs.

- Biological soil crusts are present, especially in sandier soils.

**Table 1: Fire regime groups and descriptions<sup>1</sup>**

Fire regime	Fire return interval	Severity	Severity description
1	0-35 years	Low/mixed	Generally low severity fires replacing less than 25% of the dominant overstory vegetation; can include mixed severity fires that replace up to 75% of the overstory
2	0-35 years	Replacement	High severity fires replacing greater than 75% of the dominant overstory vegetation
3	35-200 years	Mixed/low	Generally mixed severity fires; can also include low severity fires
4	35-200 years	Replacement	High severity fires
5	200+	Replacement/any severity	Generally replacement severity; can include any severity type in this frequency range.

### **Desired Conditions - Pinyon-Juniper Evergreen Shrub**

- Pinyon-Juniper Evergreen Shrub is a mix of trees and shrubs that occurs as a series of vegetation states that move from herbaceous-dominated to shrub-dominated to tree-dominated over time. Trees occur as individuals or in smaller groups ranging from young to old. Basal area ranges from 10 to 40 square foot per acre to maintain soil stability.
- Pinyon trees are occasionally absent but one or more juniper species is always present. Arizona cypress and live oak are scattered across the landscape. Typically groups are even-aged in structure with all ages represented across the landscape for an overall uneven-aged grouped appearance.
- The understory is dominated by low to moderate density shrubs depending on successional stage. The shrub component consists of one or a mix of evergreen shrub, oak, manzanita, mountain mahogany, sumac and other shrub species, which are well-distributed.
- A variety of low to high growing native perennial and annual grasses and forbs are present in the interspaces and maintain soil stability and soil productivity.

<sup>1</sup> From Interagency Fire Regime Condition Class Guidebook 2008

Draft revised plan language for Pinyon-Juniper – November 2010. For more information on Forest Plan Revision, visit <http://www.fs.fed.us/r3/coconino/plan-revision.shtml>.

- Snags and old trees with dead limbs/tops are scattered across the landscape. Large coarse woody material is present.
- Fires are typically mixed severity (25 to 75 percent mortality or top kill with a moderate frequency (Fire Regime III) while some evergreen shrub types exhibit occasional high severity fires (Fire Regime IV) (>75 percent mortality).
- Biological soil crusts are present especially in sandier soils.
- Vegetation conditions within the wildland urban interface may be composed of younger and more widely-spaced shrub patches and tree groups so fires can be suppressed more easily when needed.

### Desired Conditions - Pinyon-Juniper Woodland (persistent)

- Pinyon-Juniper Woodland (persistent) is characterized by even-aged patches of pinyons and junipers that at the landscape level form multi-aged woodlands. Very old trees (>300 years old) are present. Old growth occurs as patches on the landscape.
- Tree density is high and canopy cover exceeds 40 percent, shrubs are sparse to moderate, and herbaceous cover is low and discontinuous.
- Snags and older trees with dead limbs and/or tops are scattered across the landscape.
- The composition, structure, and function of vegetative conditions are resilient to the frequency, extent and severity of disturbances (e.g. insects, diseases, and fire) and climate variability. Insects and disease occur at endemic levels.
- Fire as a disturbance is less frequent and variable due to differences in ground cover. The fires that do occur are mixed to high severity (Fire Regime III, IV, & V).

### Guideline

- On grassland soil types, pushes *[definition forthcoming]* in pinyon juniper grasslands, juniper grasslands, or pinyon-juniper evergreen shrub should be treated to maintain seral grasslands.
- On non-grassland soil types, pushes in pinyon juniper grasslands, juniper grasslands, or pinyon-juniper evergreen shrub should be treated to move towards desired condition for the particular woodland type.
- Grassland soil types within the pinyon juniper types should be restored to grassland desired conditions.

- Where canopy cover exceeds 40 percent, slash treatments that improve herbaceous production, soil and watershed condition, and soil productivity (such as lop and scatter and mastication) should be used. The intent is to thin to encourage response by herbaceous vegetation and allow smaller debris to decompose in place on the ground.
- Seed with native species appropriate for the ecological unit, (i.e. similar elevation, soil type, eco regions) should be used.
- Where allowable, escape ramps on metal water sources are constructed and managed so wildlife doesn't become trapped or killed.
- Within pinyon juniper evergreen shrub wildland urban interface, the frequency of disturbance from fire, vegetation treatments, and other management activities may be higher than the natural disturbance regime to achieve *[objectives to be determined]*.

## Objectives

- Treat between *[number to be determined]* acres of pinyon juniper vegetation types within 10 years following plan approval to move toward desired conditions. Treatment priorities should move forest priority sixth code watersheds towards satisfactory conditions *[will supplement with list of priority watersheds when available]*.